



# **Rocky Flats Environmental Technology Site**

## **TYPE 1 RECONNAISSANCE LEVEL CHARACTERIZATION REPORT (RLCR)**

### **Building 984 Closure Project**

**REVISION 0**

**August 28, 2003**

**CLASSIFICATION REVIEW NOT REQUIRED PER  
EXEMPTION NUMBER CEX-005-02**

1/48

ATOMIC ENERGY  
IA-A-001657

TYPE 1  
RECONNAISSANCE LEVEL CHARACTERIZATION  
REPORT (RLCR)

Building 984 Closure Project

REVISION 0

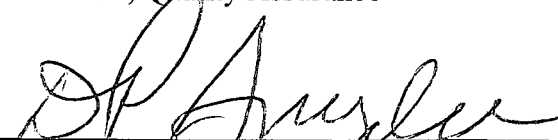
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2

## TABLE OF CONTENTS

<b>ABBREVIATIONS/ACRONYMS .....</b>	<b>IV</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>V</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
1.1 PURPOSE .....	1
1.2 SCOPE.....	1
1.3 DATA QUALITY OBJECTIVES .....	1
<b>2 HISTORICAL SITE ASSESSMENT .....</b>	<b>2</b>
<b>3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS .....</b>	<b>2</b>
<b>4 CHEMICAL CHARACTERIZATION AND HAZARDS.....</b>	<b>3</b>
4.1 ASBESTOS .....	3
4.2 BERYLLIUM (BE).....	3
4.3 RCRA/CERCLA CONSTITUENTS [INCLUDING METALS AND VOLATILE ORGANIC COMPOUNDS (VOCs)].....	4
4.4 POLYCHLORINATED BIPHENYLS (PCBS) .....	4
<b>5 PHYSICAL HAZARDS.....</b>	<b>4</b>
<b>6 DATA QUALITY ASSESSMENT.....</b>	<b>5</b>
<b>7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES .....</b>	<b>5</b>
<b>8 FACILITY CLASSIFICATION AND CONCLUSIONS.....</b>	<b>6</b>
<b>9 REFERENCES .....</b>	<b>7</b>

## ATTACHMENTS

- A Facility Location Map
- B Historical Site Assessment Report
- C Radiological Data Summaries and Survey Maps
- D Chemical Data Summaries and Sample Maps
- E Data Quality Assessment (DQA) Detail

## ABBREVIATIONS/ACRONYMS

ACM	Asbestos containing material
Be	Beryllium
CDPHE	Colorado Department of Public Health and the Environment
CERCLA	Comprehensive Emergency Response, Compensation and Liability Act
DCGL <sub>EMC</sub>	Derived Concentration Guideline Level – elevated measurement comparison
DCGL <sub>w</sub>	Derived Concentration Guideline Level – Wilcoxon Rank Sum Test
D&D	Decontamination and Decommissioning
DDCP	Decontamination and Decommissioning Characterization Protocol
DOE	U.S. Department of Energy
DPP	Decommissioning Program Plan
DQA	Data quality assessment
DQOs	Data quality objectives
EPA	U.S. Environmental Protection Agency
FDPM	Facility Disposition Program Manual
HVAC	Heating, ventilation, air conditioning
HSAR	Historical Site Assessment Report
IHSS	Individual Hazardous Substance Site
IWCP	Integrated Work Control Package
K-H	Kaiser-Hill
LBP	Lead-based paint
LLW	Low-level waste
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum detectable activity
MDC	Minimum detectable concentration
NORM	Naturally occurring radioactive material
NRA	Non-Rad-Added Verification
OSHA	Occupational Safety and Health Administration
PARCC	Precision, accuracy, representativeness, comparability and completeness
PCBs	Polychlorinated Biphenyls
PDS	Pre-demolition survey
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
FFFO	Rocky Flats Field Office
RLC	Reconnaissance Level Characterization
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TSA	Total surface activity
VOCs	Volatile organic compounds

## EXECUTIVE SUMMARY

A Reconnaissance Level Characterization (RLC) was performed to enable facility "Typing" per the DPP (10/8/98) and compliant disposition and waste management of Building 984. Because this facility was an anticipated Type 1 facility, the characterization was performed in accordance with the Pre-Demolition Survey Plan (MAN-127-PDSP) requirements. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces (i.e., floor, walls, ceiling and roof). Environmental media beneath and surrounding the facility were not within the scope of this RLCR and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

The RLC encompassed both radiological and chemical characterization to enable compliant disposition and waste management pursuant to the D&D Characterization Protocol (MAN-077-DDCP). The characterization built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report.

Results indicate that no radiological contamination exists in excess of the PDSP unrestricted release limits of DOE Order 5400. No friable or non-friable asbestos containing building materials were identified. All beryllium sample results for Building 984 were less than  $0.1 \mu\text{g}/100\text{cm}^2$ . Fluorescent light ballasts may contain PCBs. PCB ballasts will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. The RCRA Unit in 984 (Permitted Storage Area, Unit 984.1) will be closed in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. Concrete associated with Building 984 meets the criteria for concrete recycling criteria per the RFCA RSOP for Recycling Concrete.

Based upon this RLCR, Building 984 is considered a Type 1 facility and can be demolished. To ensure this facility remains free of contamination and RLC data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

## 1 INTRODUCTION

A Reconnaissance Level Characterization (RLC) was performed to enable compliant disposition and waste management of Building 984. Because this facility was an anticipated Type 1 facility, a PDS characterization was performed. All facility surfaces were characterized in this RLC, including the interior and exterior surfaces of the facilities (i.e., floor, walls, ceiling and roof). Environmental media beneath and surrounding the facility were not within the scope of this RLC Report (RLCR) and will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA.

As part of the Rocky Flats Environmental Technology Site (RFETS) Closure Project, numerous facilities will be removed, among these is Building 984. The location of this facility is shown in Attachment A, *Facility Location Map*. This facility no longer supports the RFETS mission and will be removed to reduce Site infrastructure, risks and/or operating costs.

Before this facility can be removed, a Reconnaissance Level Characterization (RLC) must be conducted; this document presents the RLC results. The RLC was conducted pursuant to the Decontamination and Decommissioning Characterization Protocol (MAN-077-DDCP) and the Pre-Demolition Survey Plan for D&D Facilities (MAN-127-PDSP). The PDS built upon physical, chemical and radiological hazards identified in the facility-specific Historical Site Assessment Report (HSAR).

### 1.1 Purpose

The purpose of this report is to communicate and document the results of the RLC effort. An RLC is performed before Type 1 building demolition to define the pre-demolition radiological and chemical conditions of a facility. Pre-demolition conditions are compared with the unrestricted release limits for radiological and non-radiological contaminants. RLC results will enable project personnel to make final disposition decisions, develop related worker health and safety controls, and estimate waste volumes by waste types.

### 1.2 Scope

This report presents the pre-demolition radiological and chemical conditions for Building 984. Environmental media beneath and surrounding this facility were not within the scope of this RLCR and will be addressed using the Soil Disturbance Permit process and in compliance with RFCA.

### 1.3 Data Quality Objectives

The Data Quality Objectives (DQOs) used in designing this RLC were the same DQOs identified in the Pre-Demolition survey Plan for D&D Facilities (MAN-127-PDSP.) Refer to section 2.0 of MAN-127-PDSP for these DQOs.

## 2 HISTORICAL SITE ASSESSMENT

A Facility-specific Historical Site Assessment (HSA) was conducted to understand the facility histories and related hazards. The assessment consisted of facility walk-downs, interviews, and document review, including review of the Historical Release Report (refer to the D&D Characterization Protocol, MAN-077-DDCP). Results were used to identify data gaps and needs, and to develop radiological and chemical characterization plans. Results of the facility-specific HSA were documented in a facility-specific *Historical Site Assessment Report (HSAR) for Area 2-Group 2 Facilities*, dated May 7th 2002, Revision 1 (refer to Attachment B, *Historical Site Assessment Report*). In summary, the HSAR identified minimal potential for radiological or chemical hazards.

## 3 RADIOLOGICAL CHARACTERIZATION AND HAZARDS

Building 984 was characterized for radiological hazards per the PDSP. Radiological characterization was performed to define the nature and extent of radioactive materials that may be present on the facility surfaces. Measurements were performed to evaluate the contaminants of concern. Based upon a review of historical and process knowledge, building walk-downs, and MARSSIM guidance, a Radiological Characterization Plan was developed during the planning phase that describe the minimum survey requirements (refer to the RISS Characterization Project files).

Radiological survey package 991-A-001 was developed for the interior surfaces of Building 984 and radiological survey package 991-B-005 was developed for the exterior surfaces of Building 984. The survey packages were developed in accordance with Radiological Safety Practices (RSP) 16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure*. Total surface activity (TSA), removable surface activity (RSA), media samples, and scan measurements were collected in accordance with RSP 16.02 *Radiological Surveys of Surfaces and Structures*. Radiological survey data were verified, validated and evaluated in accordance with RSP 16.04, *Radiological Survey/Sample Data Analysis*. Quality control measures were implemented relative to the survey process in accordance with RSP 16.05, *Radiological Survey/Sample Quality Control*.

Seventeen (17) TSA measurements (15 random and 2 QC) and fifteen (15) RSA measurements (15 random) were performed on the interior surfaces and seventeen (17) TSA measurements (15 random and 2 QC) and fifteen (15) RSA measurements (15 random) were performed on the exterior surfaces. A minimum of 5% of the facility interior and exterior surfaces were scanned. The RLC data confirmed that this facility does not contain radiological contamination above the surface contamination guidelines provided in the PDSP. Radiological survey data, statistical analysis results, and survey locations are presented in Attachment C, *Radiological Data Summary and Survey Maps*. The radiological survey unit packages are maintained in the RISS Characterization Project files. Level 2 Isolation Control postings are displayed on the building to ensure no radioactive materials are inadvertently introduced.

7

## 4 CHEMICAL CHARACTERIZATION AND HAZARDS

Building 984 was characterized for chemical hazards per the PDSP. Chemical characterization was performed to determine the nature and extent of chemical contamination that may be present on, or in this facility. Based upon a review of historical and process knowledge, visual inspections, and PDSP DQOs, additional sampling needs were determined. A Chemical Characterization Plan (refer to RISS Characterization Project files) was developed during the planning phase that describes sampling requirements, the justification for the sample locations and estimated number of samples. Contaminants of concern included asbestos, beryllium, RCRA/CERCLA constituents, lead and PCBs. Refer to Attachment D, *Chemical Data Summaries and Sample Maps*, for details on sample results and sample locations.

### 4.1 Asbestos

A survey of building materials suspected of containing asbestos was conducted in Building 984 in accordance with the RLCP. A CDPHE-certified asbestos inspector conducted the inspection and sampling in accordance with the *Asbestos Characterization Protocol, PRO-563-ACPR, Revision 1*. Building materials suspected of containing asbestos were identified for sampling at the discretion of the inspector.

A comprehensive, invasive asbestos inspection was conducted to determine the presence of friable and non-friable asbestos containing building materials. All bulk samples of building materials suspected of containing asbestos were negative ("None Detected"). Asbestos laboratory analysis data and sample location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.

### 4.2 Beryllium (Be)

Based on the HSAR and personnel interviews, Building 984 was an anticipated Type 1 facility. Per the HSAR, waste drums stored inside Building 984 contained beryllium waste. Therefore, biased beryllium sampling was performed in accordance with the PDSP and the *Beryllium Characterization Procedure, PRO-536-BCPR, Revision 0, September 9, 1999*. Biased sample locations corresponded with the most probable areas of dust accumulation (including beryllium dust), assuming airborne deposition.

All beryllium surface smear sample results for Building 984 were less than 0.1  $\mu\text{g}/100\text{cm}^2$ . Beryllium laboratory sample data and location maps are contained in Attachment D, *Chemical Data Summaries and Sample Maps*.



#### **4.3 RCRA/CERCLA Constituents [including metals and volatile organic compounds (VOCs)]**

Based on the HSAR, facility walk-downs and a review of RFETS waste management databases, Building 984 functioned as a waste storage facility. Although wastes managed in Building 984 have included RCRA/CERCLA regulated materials, there is no record of spills or evidence of contamination. Based on the above historical and process knowledge, RCRA/CERCLA sampling was not performed as part of this RLC. The RCRA Unit in 984 (Permitted Storage Area, Unit 984.1) will be closed in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP.

Sampling for lead in paint in these facilities was not performed. Environmental Waste Compliance Guidance #27, *Lead-based Paint (LBP) and Lead-based paint Debris Disposal*, states that LBP debris generated outside of currently identified high contamination areas shall be managed as non-hazardous (solid) wastes, and additional analysis for characteristics of hazardous waste derived from LBP is not a requirement for disposal.

This facility may contain RCRA regulated materials such as mercury switches, batteries, and fluorescent lamps. A thorough inspection of the facility will be made, and all regulated materials will be removed prior to demolition.

#### **4.4 Polychlorinated Biphenyls (PCBs)**

Based on a review of the HSAR and facility walk-downs, there is no history of PCB use (other than light ballasts) or evidence of PCB contamination in this facility. Building 984 was never used to store PCB waste. Furthermore, based on the age of the building (constructed after 1980), paints used are not expected to contain PCBs.

This facility may contain fluorescent light ballasts containing PCBs. Fluorescent light fixtures will be inspected to identify PCB ballasts during removal operations. PCB ballasts will be identified based on factors such as labeling (e.g., PCB-containing and non PCB-containing), manufacturer, and date of manufacturing. All ballasts that do not indicate non PCB-containing are assumed to be PCB-containing. Leaking PCB ballasts and those that weigh more than 9 pounds will be removed prior to demolition and managed in accordance with Colorado hazardous waste regulations. If non-leaking PCB ballasts are discovered and left in the facility, the debris will be managed as PCB Bulk Product Waste.

### **5 PHYSICAL HAZARDS**

Physical hazards associated with Building 984 are those common to standard industrial environments and include hazards associated with energized systems, utilities, and trips and falls. There are no unique physical hazards associated with this building. This building has been relatively well maintained and is in good physical condition, therefore, does not present hazards associated with building deterioration. Physical hazards are

controlled by the Site Occupational Safety and Industrial Hygiene Program, which is based on OSHA regulations, DOE orders, and standard industry practice.

## 6 DATA QUALITY ASSESSMENT

Data used in making management decisions for decommissioning of Building 984 and consequent waste management are of adequate quality to support the decisions documented in this report. The data presented in this report (Attachments C and D) were verified and validated relative to DOE quality requirements, applicable EPA guidance, and original DQOs of the project.

In summary, the Verification and Validation (V&V) process corroborates that the following elements of the characterization process are adequate:

- ◆ the *number* of samples and surveys;
- ◆ the *types* of samples and surveys;
- ◆ the sampling/survey process as implemented “in the field”; and,
- ◆ the laboratory analytical process, relative to accuracy and precision considerations.

Details of the DQA are provided in Attachment E.

## 7 DECOMMISSIONING WASTE TYPES AND VOLUME ESTIMATES

The demolition and disposal of Building 984 will generate a variety of wastes. Estimated waste types and waste volumes are presented below. All waste can be disposed of as sanitary waste, except PCB Bulk Product Waste. There is no radioactive or hazardous waste. PCB ballasts will be managed pursuant to the Site PCB waste management procedures. The RCRA Unit in 984 (Permitted Storage Area, Unit 984.1) will be closed in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. Concrete associated with Building 984 meets the criteria for concrete recycling criteria per the RFCA RSOP for Recycling Concrete.

Waste Volume Estimates and Material Types							
Facility	Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM (cu ft)	Other Waste
Building 984	14,500	0	2,600	7,500	0	0	5,000 Cu ft wall/roof insulation

## 8 FACILITY CLASSIFICATION AND CONCLUSIONS

Based on the analysis of radiological, chemical and physical hazards, Building 984 is classified as a RFCA Type 1 facility pursuant to the RFETS Decommissioning Program Plan (DPP; K-H, 1999) and can be demolished. The Type 1 classification is based on a review of historical and process knowledge, and newly acquired RLC data.

The RLC of Building 984 was performed in accordance with the DDCP and PDSP. All PDSP DQOs were met, and all data satisfied the PDSP DQA criteria. This facility does not contain radiological or hazardous wastes.

PCB ballasts will be managed and disposed of in compliance with Environmental Protection Agency (EPA) and Colorado Department of Public Health and Environment (CDPHE) regulations. Demolition debris will be managed in compliance with regulations governing PCBs (40 CFR 761), and Environmental Compliance Guidance #27, *Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*, as applicable. The RCRA Unit in 984 (Permitted Storage Area, Unit 984.1) will be closed in accordance with the Facility Component Removal, Size Reduction, and Decontamination Activities RSOP. Environmental media beneath and surrounding the facilities will be addressed at a future date using the Soil Disturbance Permit process and in compliance with RFCA. Concrete associated with Building 984 meets the criteria for concrete recycling criteria per the RFCA RSOP for Recycling Concrete.

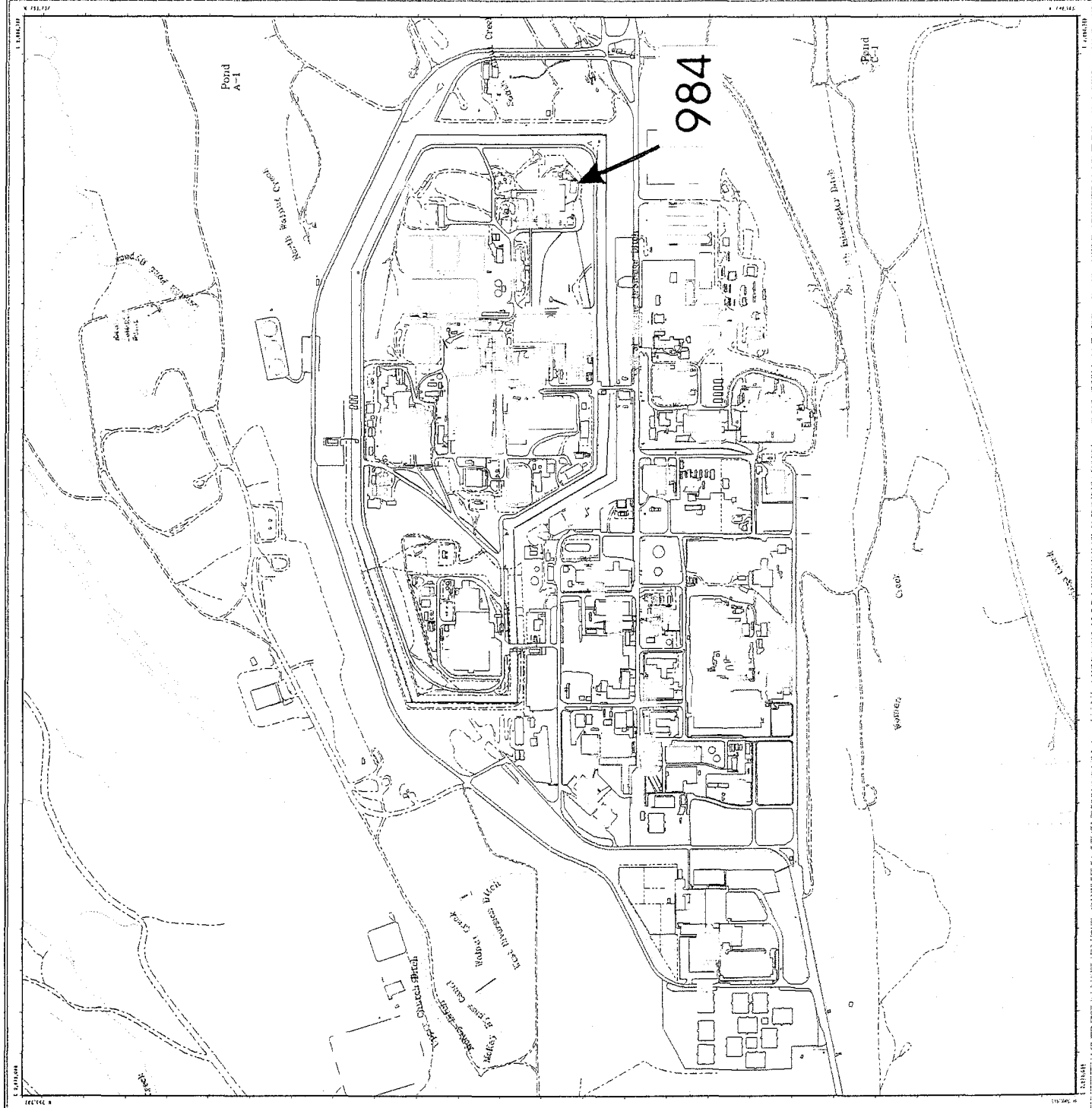
To ensure this Type 1 facility remains free of contamination and RLC data remain valid, Level 2 Isolation Controls have been established and the facility posted accordingly.

## 9 REFERENCES

- DOE/RFFO, CDPHE, EPA, 1996. *Rocky Flats Clean-up Agreement (RFCA)*, July 19, 1996.
- DOE Order 5400.5, *"Radiation Protection of the Public and the Environment"*
- EPA, 1994. *"The Data Quality Objective Process,"* EPA QA/G-4.
- K-H, 1999. *Decommissioning Program Plan*, June 21, 1999.
- MAN-131-QAPM, *Kaiser-Hill Team Quality Assurance Program*, Rev. 1, November 1, 2001.
- MAN-076-FDPM, *Facility Disposition Program Manual*, Rev. 3, January 1, 2002.
- MAN-077-DDCP, *Decontamination and Decommissioning Characterization Protocol*, Rev. 3, July 15, 2002.
- MAN-127-PDSP, *Pre-Demolition Survey Plan for D&D Facilities*, Rev. 1, July 15, 2002.
- MARSSIM - *Multi-Agency Radiation Survey and Site Investigation Manual*, December 1997 (NUREG-1575, EPA 402-R-97-016).
- PRO-475-RSP-16.01, *Radiological Survey/Sampling Package Design, Preparation, Control, Implementation, and Closure*, Rev. 1, May 22, 2001.
- PRO-476-RSP-16.02, *Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures*, Rev. 1, May 22, 2001.
- PRO-477-RSP-16.03, *Radiological Samples of Building Media*, Rev. 1, May 22, 2001.
- PRO-478-RSP-16.04, *Radiological Survey/Sample Data Analysis for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-479-RSP-16.05, *Radiological Survey/Sample Quality Control for Final Status Survey*, Rev. 1, May 22, 2001.
- PRO-563-ACPR, *Asbestos Characterization Procedure*, Revision 0, August 24, 1999.
- PRO-536-BCPR, *Beryllium Characterization Procedure*, Revision 0, August 24, 1999.
- RFETS, *Environmental Waste Compliance Guidance #25, Management of Polychlorinated Biphenyls (PCBs) in Paint and Other Bulk Product Waste During Facility Disposition*.
- RFETS, *Environmental Waste Compliance Guidance #27, Lead-Based Paint (LBP) and Lead-Based Paint Debris Disposal*.
- RFCA *Standard Operation Protocol for Recycling Concrete*, September 28, 1999.
- RFCA *Standard Operation Protocol for Facility Component Removal, Size Reduction, and Decontamination Activities*, February 4, 2001.
- Historical Site Assessment Report (HSAR) for the Area 2-Group 2 Facilities*, Dated May 7<sup>th</sup>, 2002, Revision 1.

# ATTACHMENT A

## Facility Location Map

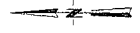


# Area 2 Group 4 Building 984

## Standard Map Features

- Buildings and other structures
- Demolished buildings and other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads

DATA SOURCE BASE FEATURES:  
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G ISI, Las Vegas.  
Digitized from the orthophotographs, 1995



Scale = 1:12450  
1 inch represents approximately 1038 feet

State Plane Coordinate Projection  
Colorado Central Zone  
Datum: NAD27

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by:  
EG&G ISI

Prepared for:  
ICM

MAP ID: FY2002

AUG 21, 2003

## ATTACHMENT B

# Historical Site Assessment Report

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Facility ID:** Area 2 – Group 2 Building 991 Cluster Type 2 and Type 1 Facilities which includes: Building 991 Product Warehouse, Building 984 Shipping Container Storage Facility, Building 985 Filter Plenum for B996/B997/999, 991TUN Tunnels Between Facilities, Building 992 Guard Post, Building 993 Security Storage Vault, Building 996 Storage Vault for B991, Building 997 Storage Vault for B991, Building 998 Storage Vault for B991, Building 999 Storage Vault for B991, Building 989 Emergency Generator for B991

**Anticipated Facility Type (1, 2, or 3):** Building 991 Type = 2, Building 984 = Type 1, Building 985 Type = 1, 991TUN = Type 2, Building 992 = Type 1, Building 993 = Type 1, Building 996 Type = 2, Building 997 Type = 2, Building 998 Type = 2, Building 999 Type = 2, Building 989 Type = 1

This facility - specific Historical Site Assessment (HSA) has been performed in accordance with:

*D&D Characterization Protocol*, RFETS MAN-077-DDCP, latest version, and  
*Facility Disposition Program Manual*, RFETS MAN-076-FDPM, latest version

**Physical Description:**

Building 991 is listed as the Product Warehouse for RFETS on the Closure Projects Facility List. Building 991 was constructed and put into service in 1952. Building 991 sits on the east side of the Plant, approximately 100 yards north of Central Avenue. Building 991 was constructed in a land depression or natural valley. Building 991 has steel-reinforced poured concrete superstructure. The size of Building 991 is approximately 165 feet wide by approximately 375 feet long which includes the Shipping Dock Area and open covered storage area on the west. Building 991 is approximately 22 feet above ground at the top of the concrete parapet (a low wall or concrete rail/wall above the roof/deck to protect the roof) for the south office and old lab areas. The north part of Building has an additional 14 feet of height which is the high-bay old process area of the building. Building 991 has approximately 37,880 square feet of floor space. Building 991 has a U-shaped Utility Tunnel which provides steam, cooling water, electrical and other utilities to the building. The Building 991 has steel-reinforced poured concrete floors, walls and roof-deck. Many of the Building 991 office hallways and office rooms have Transite® partition walls. Floor tile and carpeting are used in many offices and hallways of Building 991. A section in the Basement Utility Tunnel also has very old floor tiles that probably contain asbestos. The process and storage areas of Building 991 have steel-reinforced poured concrete walls and concrete block walls. The Building 991 east-west high-bay area has 24-inch-steel-reinforced poured concrete walls that support an overhead Crane Rail that was originally used to move heavy objects and/or equipment. The Building 991 concrete roof deck has an additional poured light-weight concrete flat roof with the BUR flat roof design sealed with tar and gravel. The Building 991 East Dock and west covered storage area have a steel roof decks. Including these two roofs Building 991 has seven different roof sections.

The Building 991 utilities at one time included steam, but the Building 991 heating system has been converted to a natural gas re-circulating hot water heating system. Building 991 has electrical power, fluorescent lighting, some sodium and/or mercury vapor lighting exist both inside and outside. Building 991 also has hot and cold running water, LSDW System, Criticality Detector and Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, telephones, Fire Sprinkler and Alarm Systems, and various building utility heating and ventilation control systems.

Building 984 the Shipping Container Storage Facility, also known as the TRU Waste Storage Facility for RFETS, is located directly south of Building 991. Building 984 has a steel I-beam support structure and it is constructed from corrugated metal sandwiched over insulation. Building 984 is constructed on two concrete slabs, as the building was constructed at two different construction phases. The original Building 984 was 24' wide X 30' long X 16' high at the roof eve. The east section or addition section of Building 984 is approximately 40' wide X 75' long X 22' high at the roof eve. The floor space for Building 984 is approximately 3,700 square feet. Both Building 984 sections are supported by steel I-beams. Building 984 was constructed in 1986 and it has approximately 3200 square feet of floor space. Building 984 has a heat-pump heating system, it has electricity for lighting, air exhausters, a Criticality Detector and Alarm System, and a LSDW System.



**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Physical Description (Con't):**

Building 985 is the Filter Plenum Facility for Buildings 996, 997, and Building 999 within the Building 991 Cluster. Building 985 is approximately 40' wide X 60' long X 17' high at the roof eve. Building 985 contains approximately 2,400 square feet of floor space. Building 985 was constructed in 1974 and is located northwest of Building 991 on the hillside. Building 985 has steel-reinforced concrete superstructure constructed on a steel-reinforced poured concrete slab. In between the concrete vertical support beams, the concrete panels appeared to be pre-poured pre-stressed concrete panels set in place and sealed with concrete, grout, and RTV type sealant. The slab-floor of Building 985 has a tank-pit that is approximately 12 feet deep (below the floor level) on the east side for the plenum firewater deluge-tank. The tank-pit has two pumps, a transfer pump and a sump pump. The exterior wall sections between the concrete vertical support beams are pre-cast pre-stressed concrete wall panels. Building 985 air-lock door entrances are constructed from concrete block. The facility has an exterior air-lock room entrance on the northeast corner and it has an exterior air-lock room entrance on the southeast corner of the facility. Building 985 has a steel-reinforced poured concrete roof/deck. The Building 985 built-up-roof includes a tar-gravel sealed over an aluminum coating, a 4-ply asbestos membrane over sheet 1-5/8' fiberglass insulation on the concrete roof-deck. Building 985 has an exterior Roof Access Ladder, exterior fire hose/firewater hookup, and Building 985 exterior Breathing-Air and communications hookups.

The Building 985 Roof has two roof drains and a parapet wall around the perimeter of the roof. Building 985 has a Criticality Detector/Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, a Fire Sprinkler/Alarm System, and a LSDW System. Building 985's main equipment components include Building Supply Air Filter Plenum FP-602/F-602 which has hot water heating coils, Building Exhaust Filter Plenum FP-601/F-601A/F-601B, along with supply and exhaust fans and motors, and waste holding Tank T-601. Building 985 is not heated, but the plenum air filtration system carries over room temperature air so the building does not get down to freezing temperature. As a freezing pre-caution fire-water and other process water lines are heat-traced to protect them from freezing.

The 991TUN is an underground tunnel between Building 991 and three of the four underground Building 991 Cluster Storage Vault Facilities, Buildings 996, 997 and Building 999. The underground 991 TUN is constructed from all approximately 18-inch thick steel-reinforced poured concrete floors, walls and ceiling/roof. The 991TUN has a 16' square Turn-Around Area at the west end and the walls and tunnel roof have an additional 18-inch thick steel-reinforced poured concrete. The 991TUN is approximately 8' wide X 12'6" high X 700' long. The 991TUN has approximately 6,000 square feet of underground floor space. The 991TUN areas are equipped with air ventilation from Building 985 and a Criticality Detector/Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, a Fire Sprinkler/Alarm System, and a LSDW System. The walls and ceiling of the 991TUN are painted.

Building 992 is the two-level Guard-Post for the Building 991 Cluster, and it was constructed in 1952. Building 992 is located at the southwest corner of the Building 991 Cluster. Building 992 is a steel-reinforced poured concrete building which includes the Main Floor slab, ceiling, parts of the Second Floor walls and the facility also has a steel-reinforced poured concrete roof deck. The ground floor of Building 992 is approximately 16'6" wide by 16'6" long by 8'10" high. The Main Floor steel-reinforced poured concrete walls extend 4' below grade and are sitting on steel-reinforced poured concrete footings. The Second Floor of Building 992 is octagon-shaped with windows on all sides for 360 degree area vision. Building 992 has 370 square feet of floor space which includes the Second Floor. The Main Floor of Building 992 has a Security Badge Access Port and window on the southeast corner and a Guard Access Door on the northeast corner; the other three wall on the Main Floor each has a large window for Guard viewing in all directions. The Main Floor has a restroom and a stairway access to the Guards Second Floor Observation Room. Building 992 has electricity for lighting, a LSDW System, alarms, and other instrumentation. Building 992 is heated by natural gas. Building 992 has two air conditioning units, a Second Floor exhaust fan, and two exterior mercury-vapor lights.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Physical Description (Con't):**

Building 993 is Security Storage Vault Facility is located approximately 150 yards east of Building 991. Building 993 is a steel framed Butler®-type metal building constructed on a concrete slab. Building 993 has electrical power for lighting and various alarms. Building 993 has two personnel access doors, one on the south end of the west wall corner and one on the east end of the south wall. The south wall also has a large truck access sliding-door, which is now boarded up inside with plywood. Building 993 is approximately 30' wide X 40' long X 15' high at the roof eve and slopes to the north for roof drainage. Building 993 has approximately 1,200 square feet of floor space. The Building 993 roof is also corrugated metal. Building 993 has four exterior mercury-vapor lights for night operations, which is included in the Building 991 Cluster. The floor has a 12 in diameter concrete pit, which was used for explosive bonding testing. In the late 1970s this pit was filled with concrete.

Building 996 is an underground Storage Vault Facility for Building 991 and it is located directly north of Building 991/885. The access tunnel, 991TUN, to Building 996 goes northeast from Building 991 and directly underneath Building 985. Building 996 was constructed in 1952 at the same time Building 991 was built. Buildings 996 and 997 are of identical design whose dimensions are 60' wide X 68' long X 16' high (underground). These two storage vaults have exterior walls of steel-reinforced concrete that are approximately 14' thick and roof/ceilings of steel-reinforced concrete that are 12' thick. The underground footprint of Building 996 is approximately 4,100 square feet, but the underground floor space is approximately 1,400 square feet. The Building 996 is equipped with air ventilation from Building 985 and a Criticality Detector/Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, a Fire Sprinkler/Alarm System, and a LSDW System. The walls, floors and ceiling of Building 996 are painted. Building 996 is partitioned into six different vault-type rooms and each room has a bank-type vault solid-steel door on it.

Building 997 is an underground Storage Vault Facility for Building 991. Building 997 is the underground Storage Vault Facility at the west end of the 991TUN which is approximately 600 feet directly west of Building 996 with Building 999 halfway in between Buildings 997 and 996. Buildings 996 and 997 are of identical design whose dimensions are 60' wide X 68' long X 16' high (underground). These two storage vaults have exterior walls of steel-reinforced concrete that are approximately 14'-thick and roof/ceilings of steel-reinforced concrete that are 12' thick. The underground footprint of Building 997 is approximately 4,100 square feet, but the underground floor space is approximately 1,400 square feet. Building 997 is equipped with air ventilation from Building 985 and a Criticality Detector/Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, a Fire Sprinkler/Alarm System, and a LSDW System. The walls, floors and ceiling of Building 997 are painted. Building 997 is partitioned into six different vault-type rooms and each room has a bank-type vault solid-steel door on it.

Building 998 is an underground Storage Vault Facility for Building 991. Building 998 is located underground, approximately 180' directly north of the northwest corner of Building 991. Building 998 has its own dedicated access tunnel, Corridor A. Building 998, also designated Room 300, is approximately 20' wide X 43'9" long X 12 feet high and the walls, floor and the roof/ceiling of steel-reinforced concrete that are 4' thick. The underground floor space of Building 998 is approximately 2,640 square feet which includes the 180' long Corridor A, Access Tunnel. Building 998 is equipped with air ventilation from Building 991, a Criticality Detector/Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, a Fire Sprinkler/Alarm System, and a LSDW System. The walls, floors and ceiling of Building 998 are painted.

Building 999 is an underground Storage Vault Facility for Building 991. The facility is located directly northwest of Building 991 and contains approximately 384 square feet of floor space. Building 998, also designated Room 500, is approximately 33' wide X 49' lone X 12 feet high and the walls and floor are 18" thick steel-reinforced concrete; and the roof/ceiling of steel-reinforced concrete that are 4' thick. The underground floor space of Building 999 is approximately 2,000 square feet. Building 999 is equipped with air ventilation from Building 985 and a Criticality Detector/Alarm System, a CAM/SAAM System including Health Physics Air Sampling Vacuum System, a Fire Sprinkler/Alarm System, and a LSDW System. The walls, floors and ceiling of Building 999 are painted. Building 997 is partitioned into four different storage rooms.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Physical Description (Con't):**

Building 989 is the Emergency Facility for the Building 991 Cluster. Building 989 is a single story facility and has steel-reinforced poured concrete floor slab, walls and roof-deck. Building 989 is approximately 16' wide X 24' long X 12' high and it has a steel-reinforced poured concrete floor roof. Building 989 has approximately 384 square feet of floor space. Building 989 has a LSDW System. Building 989 has a single steel entry door on the west and a double steel entry door on the south. Building 989 has an above ground diesel fuel tank and concrete tank-berm on the east side.

**Historical Operations:**

Building 991 has always been the Product Warehouse for the RFETS. Building 991 was the original final assembly building. Plutonium, enriched uranium, depleted uranium and components from other materials, which would include beryllium, were assembled into final products and stored for off-site shipment. Final assembly operations were in Building 991 were discontinued in 1958 and moved to another building, Building 777. Historically Building 991 also housed nondestructive testing operations, a metallography laboratory, production control operations, and other support operations.

Building 984 has always been the Shipping Container Storage Facility, RCRA Unit 984.1.

Building 985 has always been the Filter Plenum Facility for Underground Storage Vaults, Buildings 996, 997, and Building 999.

The 991TUN facility has always been the access tunnel from Building 991 to Underground Storage Vaults, Buildings 996, 997, and Building 999.

Building 992 has always been the Building 991 Cluster Facilities Guard Post.

Building 993 was a Research and Development Explosive Forming Facility.

Building 996 was always an Underground Vault Facility for Building 991.

Building 997 was always an Underground Vault Facility for Building 991.

Building 998 was always an Underground Vault Facility for Building 991.

Building 999 was always an Underground Vault Facility for Building 991.

Building 989 has always been the Emergency Generator Facility for the Building 991 Cluster Facilities.

**Current Operational Status**

Building 991 is currently in service as a TRU Waste Drum Storage Facility, a Hazardous Waste Drum Storage Facility, a Permitted Storage Facility and a Receiving and Shipping Storage of all Waste Containers for the RFETS.

Building 984 has always been the Shipping Container Storage Facility, RCRA Unit 984.1 and it is currently in service as a TRU Waste Drum Storage Facility, a Hazardous Waste Drum Storage Facility, a Permitted Storage Facility and a Receiving and Shipping Storage of all Waste Containers for the RFETS.

Building 985 has always been, and currently is in service, the Filter Plenum Facility for Underground Storage Vaults, Buildings 996, 997, and Building 999.

The 991TUN has always been and currently is the access tunnel from Building 991 to Underground Storage Vaults, Buildings 996, 997, and Building 999.

Building 992 is currently Out of Service.

Building 993 is currently in service as a Security Storage Vault for Blank Ammunition.

Building 996 is currently in service as an Underground Vault Facility for Building 991 and it contains 55-gallon waste drums.

Building 997 is currently empty and Out of Service.

Building 998 is currently in service as an Underground Vault Facility for Building 991 and it contains 55-gallon waste drums.

Building 999 is currently empty and Out of Service.

Building 989 has always been the Emergency Generator Facility for the Building 991 Cluster Facilities.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Contaminants of Concern**

**Asbestos**

*Describe any potential, likely, or known sources of Asbestos:*

All of the Building 991 Facilities might have some asbestos containing materials (ACM) of construction because the facilities were constructed in 1952-1974 time frame except Building 984 which was constructed in 1986. All of the Building 991 Cluster Facilities have partition walls, roof, and pipe insulation might contain asbestos. Although the waste stored in Buildings 991, 996, 998, and 984 may have contained trace amounts of asbestos the waste was not regulated as a TSCA waste. Building 992 (The Guard Post) might have some ACM material of construction in wall, roof, and pipe insulation.

**Beryllium (Be)**

*Describe any potential, likely, or known Be production or storage locations:*

Building 991 is on the RFETS Beryllium (Be) Areas Historical and Present list in Rooms 2 (Basement Tunnel), 110, 122, 134, 140/140A/141, 122A, Building 991 has other potentially Beryllium contaminated systems, and Building 991 Main Plenum exhausted (historically) beryllium operations to the Building 991 Roof.

Building 984 stores Low Level and TRU Wastes drums that are beryllium contaminated.

Building 985 contains Plenum 601 for Building 991 that historically exhausted beryllium operations. Building 985 has a potential for beryllium contaminated systems (internally).

Building 996 stores Low Level and TRU Wastes drums that are beryllium contaminated.

Building 997 historically stored Low Level and TRU Wastes drums that are beryllium contaminated.

Building 998 stores Low Level and TRU Wastes drums that are beryllium contaminated.

Building 999 historically stored Low Level and TRU Wastes drums that are beryllium contaminated.

One interviewee said that at one time beryllium parts, beryllium assemblies, and beryllium testing was conducted throughout Building 991. In addition low-level waste drums/crates containing Be were stored in Building 991.

*Summarize any recent Be sampling results:*

The Industrial Hygiene Department collects frequent Be samples from many of the facilities in the 991 Cluster. See the Industrial Hygiene Department for a list of recent Be samples collected. No known beryllium contamination exists in the Building 991 Cluster Type 1 Facilities, Buildings 989, 992, and Building 993.

**Lead**

*Describe any potential, likely, or known sources of Lead (e.g., paint, shielding, etc.):*

Most of the Building 991 Cluster Facilities were constructed in 1952-1974 time frame, therefore it may contain lead-based paints. No lead operations were known to have occurred in Building 991. Historically lead shielding and/or lead-shielded gloveboxes and/or hoods may have been used in Building 991, but currently the facility has no gloveboxes or hoods. All of the other Building 991 Cluster Type 1 and Type 2 Facilities that have paint on them, might have been painted with lead-based paints; this includes 991TUN, Buildings 996, 997, 998, 999, and Building 989.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**RCRA/CERCLA Constituents**

*Describe any potential, likely, or known sources of RCRA/CERCLA constituents (e.g., chemical storage, waste storage, processes):*

Building 991 is currently being used to store drums of hazardous waste some of which contain RCRA/CERCLA constituents. Cleaning chemicals were used and stored in Building 991. Building 991 has a WSRIC. Building 984 is listed on "The Master List of RCRA Units".

Building 991 has Room 170 listed on "The Master List of RCRA Units" as a Permitted Area, Unit 991.1.

Building 984 is a Permitted Storage Area, Unit 984.1

Building 993 has a "Special Material Storage" area listed on "The Master List of RCRA Units" as a Permitted Area, Unit 993.1. Dynamite was used in the explosive forming testing performed in the pit in the floor of this building. The pit was filled with water during this testing, which sometimes used depleted uranium alloys.

Building 996 has "Container Storage, 996 Vault", never used for hazardous waste and not subject to RCRA regulation, Unit 90.128.

*Describe any potential, likely, or known spill locations (and sources, if any):*

Small volume spills of solvents, acids and other RCRA/CERCLA constituents likely occurred, but no large volume chemical spills have been documented in any of the Building 991 Cluster facilities. See this environmental Concerns section below for additional release information documented in IHSSs, PACs, and UBCs.

*Describe methods in which spills were mitigated, if any:*

Unknown

**PCBs**

*Describe any potential, likely, or known sources of PCBs (e.g., light ballasts, paints, equipment, etc.):*

Buildings 991, 985, 992, 993, 996, 997, 998, and Building 999 may contain PCB/lead-based paints. Building 991 Cluster Type 1 and Type 2 Facilities have lighting ballasts that might contain PCBs. No known equipment containing PCBs, were ever located in Building 991. The Building 991 Cluster, exterior power transformers, Transformers 991-1 and 991-2, have been known to contain PCBs These transformer have been documented in PAC 900-1306, "Transformers 991-1 and 991-2" and was recommended for NFA in the 1996 HRR Annual Update.

*Describe any potential, likely, or known spill locations (and sources, if any):*

Building 991 Cluster, exterior power transformers, Transformers 991-1 and 991-2 historically leaked at least on one occasion.

*Describe methods in which spills were mitigated, if any:*

Unknown

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Radiological Contaminants**

*Describe any potential, likely, or known radiological production or storage locations:*

Building 991 has radiological contaminated drums stored in most rooms is the back area, behind the locked entry doors. Building 984 stores low-level contaminated waste drums and low-level contaminated waste crates from Building 991 and the U/Pu contaminated buildings at RFETS until shipments can be made out of the facility. Buildings 991 and 984 are currently posted as a RMA. The pit in the floor slab (which was filled with water during the testing) of Building 993 was used to test the forming of flat pieces of various metal. Depleted uranium alloys were sometimes used in these tests, there is no known building contamination resulting from these tests.

*Describe any potential, likely, or known spill locations (e.g., known leaking sealed radioactive sources, leaking waste drums, potentially contaminated drains, etc.):*

Small volume spills and occasional cross-contamination from the exterior of the waste containers stored in these building may have occurred, but no large volume spills have been documented in any of the Building 991 Cluster facilities. See the Environmental Concerns section for additional release information related to IHSSs, PACs and UBCs.

*Describe methods in which spills were mitigated, if any:*

Spills were cleaned up to the standards of the day.

*Describe any potential, likely, or known isotopes of concern (e.g., weapons grade plutonium, uranium isotopes, pure beta emitters, mixed fission products, etc.):* Isotopes of concern include but are not limited to plutonium, enriched uranium, and depleted uranium. No pure beta emitters or mixed fission products are not known to have been handled in any of the facilities addressed in this HSA. Building 991 has several sealed radioactive sources that are stored and routinely used in the facility. These sealed sources are stored in five different locations in Building 991. The sealed radioactive sources include Pu-238, Pu-239, Cf-252, Cs-137, Sr-90, Ir-192, and Eu-152. None of the sealed sources were known to have leaked.

*Describe any potential, likely, or known external facility contamination (e.g., stack release points, unfiltered ventilation, facility's physical location to known site releases, etc.):*

See "Environmental Restoration Concerns" section below.

**Environmental Restoration Concerns**

*Describe any ER concerns that could affect facility characterization (e.g., IHSSs, PACs, UBCs):*

Building 991 has UBC-991 which includes Buildings 991, 996, 997, 998, and Building 999 that historically had a lot of different materials and components stored and assembled in them.

Building 991/992 has PAC 900-184, a Steam Cleaning Area for radioactively-contaminated equipment and drums, that is an area of concern.

Building 991 has PAC 900-173 South Dock Area, Building 991 and the associated Buildings 996, 997, 998, and 999, incidents involving very small quantities of plutonium, uranium, and beryllium. Small spills likely occurred in these areas and small parts and equipment were washed in the Building 991 dock area.

Building 991 has PAC 900-1301, enclosed 50 feet wide along the south side of storage of various radioactive contaminated waste and materials is an area of concern.

Building 991 has PAC 900-1302, Gasoline Spill, NFA Recommendation approved by EPA, 1992<sup>4</sup>.

Building 991 has PAC 900-1303, Natural Gas Leak, NFA Recommendation approved by EPA, 1992<sup>4</sup>.

Building 991 has PAC 900-1304, Chromic Acid Spill, NFA Recommendation approved by EPA, 1992<sup>4</sup>.

Building 991 has PAC 900-1305, Building 991 Roof, NFA Recommendation approved by EPA, 1992<sup>4</sup>.

Building 991 has PAC 900-1306, Transformers 991-1 and 991-2, Recommended for NFA in 1996 HRR Annual Update.

Building 993 has PAC 900-1307 because of an Explosive Forming/Bonding Pit experiments. These experiments involve the use of dynamite to bond depleted uranium alloys with stainless steel.

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

**Additional Information**

*Describe any additional information that may be useful during facility characterization (e.g., contaminant migration routes, waste handling operations, physical hazards, Historical Release Reports, WSRIC data, etc.):*

The Building 991 Cluster has several PACs that are listed in the RFETS Historical Release Reports. Buildings 991 and 985 both have a WSRIC.

**References**

*Provide all sources of information utilized to gather data for facility history (e.g., documents, files, interviews). Attach all applicable supporting documentation.*

Sources reviewed to complete this HSA were the RFETS Facility list, the Historical Release Report, the Listing of Beryllium Areas Historical and Present, Site Master List of RCRA Units, and the Site IHSS, PAC, and UBC databases. Building 991 has a Facility Safety Analysis Report (FSAR). Building 991 and Building 985 both have a WSRIC. In addition, a facility walkdown of all Building 991 Cluster Facilities was performed. The Configuration Control Authority for Building 991 was interviewed for Type 1 Facilities and Type 2 Facilities and he was very familiar with every one of them as to current configuration and use, but he knew very little about historical operations.

**Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 991, Type 2**

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
83,320	500	6,000	2,500	3,500	TBD	1,800 Transite® cu ft wall panels 12,000 cu ft BUR, (possibly ACM) 500 cu ft floor tile, (possibly ACM) 2,000 cu ft ceiling tile, (possibly ACM) 2,500 cu ft pipe insulation (possibly ACM)

**Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 984, Type 1**

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
14,500	None	2,600	7,500	None	TBD	5,000 Cu ft wall/roof insulation

**Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 985, Type 1**

Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)

**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

18,000	None	980	None	None	TBD	900 cu ft pipe Insulation 400 cu ft fiberglass insul. 600 cu ft asbestos membrane roofing material
<b>Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 989, Type 1</b>						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
3,200	None	240	None	None	TBD	60 cu ft pipe insulation
<b>Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, 991TUN, Type 2</b>						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
37,000	None	2,500	None	None	TBD	None
<b>Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 992, Type 1</b>						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
2,500	None	1,200	None	300	TBD	400 cu ft window Glass 4 cu ft Mercury Vapor Lights 60 cu ft pipe insulation 200 cu ft wall/ceiling insul
<b>Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 993, Type 1</b>						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
5,000	30	800	3,500	None	TBD	30 cu ft window Glass 4 cu ft Mercury Vapor Lights
<b>Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 996, Type 2</b>						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
55,000	600	120	None	None	TBD	None



**D&D RISS Facility Characterization  
Historical Site Assessment Report  
May 7, 2002, Rev. 1**

Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Cluster, Building 997, Type 1						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
55,000	600	120	None	None	TBD	None
<b>Further Actions</b> <i>Recommend any further actions, if any (e.g., characterization, decontamination, special handling, etc.):</i>  Begin the RLC/PDS process.						
Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Facilities, Building 998, Type 2						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
31,200	None	20	None	None	TBD	None
Waste Volume Estimates and Material Types For Area 2 – Group 2, Building 991 Cluster, Building 999, Type 1						
Concrete (cu ft)	Wood (cu ft)	Metal (cu ft)	Corrugated Sheet Metal (cu ft)	Wall Board (cu ft)	ACM	Other Waste (cu ft)
28,800	None	20	None	None	TBD	None
<b>Further Actions</b> <i>Recommend any further actions, if any (e.g., characterization, decontamination, special handling, etc.):</i>  Begin the RLC/PDS process.						
<b>Note:</b> This HSA was performed prior to SME walkdowns, and chemical and radiological characterization package preparations. SMEs should evaluate and/or verify all information during the RLC/PDS process. SMEs may need to review additional documentation and perform additional interviews. Information contained in this HSA Report only represents a “snapshot” in time. Subsequent data may be obtained during SME walkdowns and chemical and radiological characterization package preparations, which may conflict with this report. However, this HSA Report will not be amended. The RLC data will take precedence over the information in this HSA Report. RLC data will appear in the RLCR/PDSR.						

Prepared By:

Bob Sheets  
Name

*Bob Sheets*  
Signature  
For Bob Sheets

5-7-02  
Date

# ATTACHMENT C

## Radiological Data Summaries and Survey Maps

**SURVEY UNIT 991-A-001**  
**RADIOLOGICAL DATA SUMMARY - PDS**

Survey Unit Description: B984 (Interior )

<u>Total Surface Activity Measurements</u>			<u>Removable Activity Measurements</u>		
	15	15		15	
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	-11.4	dpm/100 cm <sup>2</sup>	MIN	-1.2	dpm/100 cm <sup>2</sup>
MAX	27.3	dpm/100 cm <sup>2</sup>	MAX	1.8	dpm/100 cm <sup>2</sup>
MEAN	7.0	dpm/100 cm <sup>2</sup>	MEAN	0.0	dpm/100 cm <sup>2</sup>
STD DEV	10.8	dpm/100 cm <sup>2</sup>	STD DEV	1.1	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

28

**SURVEY UNIT 991-A-001  
TSA - DATA SUMMARY**

Manufacturer:	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9
Serial #:	1379	1425	3105
Cal Due Date:	12/25/03	1/24/04	1/15/04
Analysis Date:	7/29/03	8/5/03	8/5/03
Alpha Eff. (c/d):	0.216	0.225	0.201
Alpha Bkgd (cpm)	1.0	3.0	1.3
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1</sup>
1	7	4.0	18.5	4.0	18.5	7.2
2	8	8.0	35.6	2.0	8.9	24.2
3	7	5.0	23.1	2.0	9.3	11.8
4	7	2.0	9.3	2.0	9.3	-2.1
5	8	7.3	32.4	2.7	12.0	21.1
6	7	1.0	4.6	3.0	13.9	-6.7
7	8	4.0	17.8	1.3	5.8	6.4
8	7	0.0	0.0	2.0	9.3	-11.4
9	8	4.0	17.8	2.7	12.0	6.4
10	8	8.7	38.7	5.3	23.6	27.3
11	7	4.0	18.5	1.0	4.6	7.2
12	8	3.3	14.7	2.7	12.0	3.3
13	8	4.0	17.8	4.0	17.8	6.4
14	7	2.0	9.3	1.0	4.6	-2.1
15	8	4.0	17.8	2.0	8.9	6.4

<sup>1</sup> - Average LAB used to subtract from Gross Sample Activity

11.4	Sample LAB Average
MIN	-11.4
MAX	27.3
MEAN	7.0
SD	10.8
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

3 QC	9	6.7	33.3	0.0	0.0	28.4
11 QC	9	2.0	10.0	2.0	10.0	5.0

<sup>1</sup> - Average QC LAB used to subtract from Gross Sample Activity

5.0	QC LAB Average
Transuranic DCGL <sub>w</sub>	100

29

**SURVEY UNIT 991-A-001  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	1	2	3	4
<b>Serial #:</b>	770	1164	924	959
<b>Cal Due Date:</b>	10/17/03	11/30/03	10/23/03	1/14/04
<b>Analysis Date:</b>	8/11/03	8/11/03	8/11/03	8/11/03
<b>Alpha Eff. (c/d):</b>	33	33	33	33
<b>Alpha Bkgd (cpm)</b>	0.3	0.2	0.4	0.3
<b>Sample Time (min)</b>	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	1	0.0	-0.9
2	2	1.0	0.9
3	3	0.0	-1.2
4	4	0.0	-0.9
5	1	1.0	0.6
6	2	0.0	-0.6
7	3	2.0	1.8
8	4	0.0	-0.9
9	1	0.0	-0.9
10	2	1.0	0.9
11	3	0.0	-1.2
12	4	1.0	0.6
13	1	1.0	0.6
14	2	0.0	-0.6
15	3	2.0	1.8
		MIN	-1.2
		MAX	1.8
		MEAN	0.0
		SD	1.1
		Transuranic DCGL <sub>w</sub>	20

# PRE-DEMOLITION SURVEY FOR 991 CLUSTER

Survey Area: A

Survey Unit: 991-A-001

Classification: 3

Building: 984

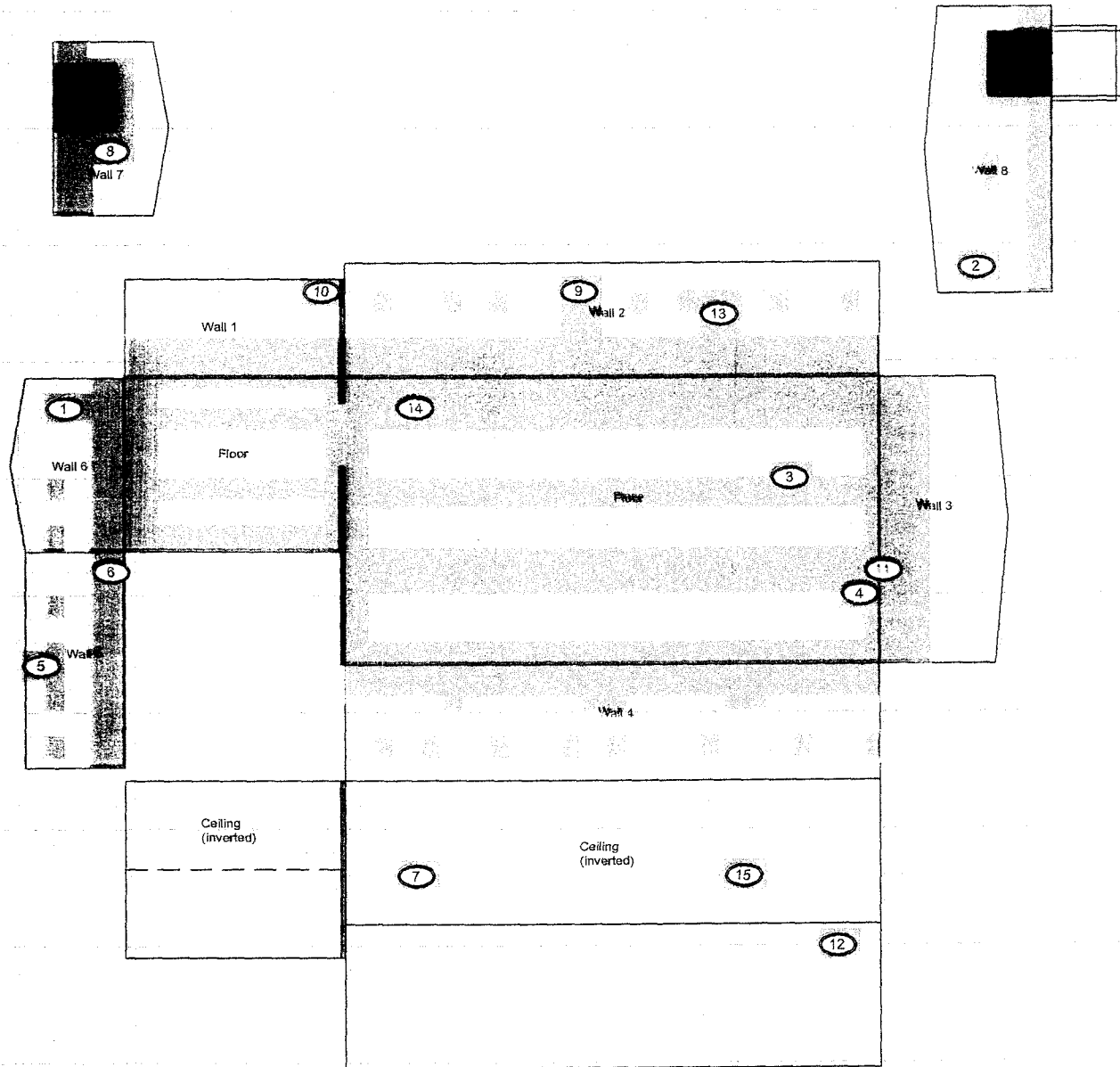
Survey Unit Description: Interior of Building

Total Area: 1187 sq. m.

Total Floor Area: 351 sq. m.

PAGE 1 OF 1

## Building 984



### SURVEY MAP LEGEND

- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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### Scan Survey Information

Survey Instrument ID #(s): & RCT ID #(s):  
7, 8



1 inch = 24 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

CH2MHILL  
Communications Group

MAP ID: 02-0355/984-IN-SC

Aug. 13, 2003

Scan Area

**SURVEY UNIT 991-B-005**  
**RADIOLOGICAL DATA SUMMARY - PDS**

**Survey Unit Description: B984 (Exterior )**



Total Surface Activity Measurements			Removable Activity Measurements		
	15	15		15	
	Number Required	Number Obtained		Number Required	Number Obtained
MIN	1.7	dpm/100 cm <sup>2</sup>	MIN	-1.2	dpm/100 cm <sup>2</sup>
MAX	53.0	dpm/100 cm <sup>2</sup>	MAX	3.9	dpm/100 cm <sup>2</sup>
MEAN	28.5	dpm/100 cm <sup>2</sup>	MEAN	0.7	dpm/100 cm <sup>2</sup>
STD DEV	14.7	dpm/100 cm <sup>2</sup>	STD DEV	1.6	dpm/100 cm <sup>2</sup>
TRANSURANIC DCGL <sub>w</sub>	100	dpm/100 cm <sup>2</sup>	TRANSURANIC DCGL <sub>w</sub>	20	dpm/100 cm <sup>2</sup>

**SURVEY UNIT 991-B-005  
TSA - DATA SUMMARY**

Manufacturer:	NE Electra	NE Electra	NE Electra
Model:	DP-6	DP-6	DP-6
Instrument ID#:	7	8	9
Serial #:	1366	2344	3106
Cal Due Date:	11/27/03	1/29/04	9/17/03
Analysis Date:	7/29/03	8/6/03	8/6/03
Alpha Eff. (c/d):	0.212	0.220	0.228
Alpha Bkgd (cpm)	5.0	4.0	4.0
Sample Time (min)	1.5	1.5	1.5
LAB Time (min)	1.5	1.5	1.5
MDC (dpm/100cm <sup>2</sup> )	48.0	48.0	48.0

Sample Location Number	Instrument ID#:	Sample Gross Counts (cpm)	Sample Gross Activity (dpm/100cm <sup>2</sup> )	LAB Gross Counts (cpm)	LAB Gross Activity (dpm/100cm <sup>2</sup> )	Sample Net Activity (dpm/100cm <sup>2</sup> ) <sup>1</sup>
1	7	12.7	59.9	0.7	3.3	42.7
2	7	14.0	66.0	4.0	18.9	48.8
3	8	12.0	54.5	6.7	30.5	37.3
4	8	11.3	51.4	1.3	5.9	34.1
5	9	10.7	46.9	5.3	23.2	29.7
6	7	8.7	41.0	2.0	9.4	23.8
7	7	4.0	18.9	6.7	31.6	1.7
8	9	16.0	70.2	2.0	8.8	53.0
9	7	6.0	28.3	5.0	23.6	11.1
10	7	8.0	37.7	8.0	37.7	20.5
11	8	10.7	48.6	4.0	18.2	31.4
12	7	8.0	37.7	1.0	4.7	20.5
13	7	6.0	28.3	6.0	28.3	11.1
14	7	8.0	37.7	3.0	14.2	20.5
15	9	13.3	58.3	0.0	0.0	41.1

<sup>1</sup> - Average LAB used to subtract from Gross Sample Activity

17.2	Sample LAB Average
MIN	1.7
MAX	53.0
MEAN	28.5
SD	14.7
Transuranic DCGL <sub>w</sub>	100

**QC Measurements**

8 QC	8	11.2	50.9	4.7	21.4	35.7
2 QC	8	8.4	38.2	2.0	9.1	23.0

<sup>1</sup> - Average QC LAB used to subtract from Gross Sample Activity

15.2	QC LAB Average
Transuranic DCGL <sub>w</sub>	100

**SURVEY UNIT 991-B-005  
RSC - DATA SUMMARY**

<b>Manufacturer:</b>	Eberline	Eberline	Eberline	Eberline
<b>Model:</b>	SAC-4	SAC-4	SAC-4	SAC-4
<b>Instrument ID#:</b>	1	2	3	4
<b>Serial #:</b>	770	1164	924	959
<b>Cal Due Date:</b>	10/17/03	11/30/03	10/23/03	1/14/04
<b>Analysis Date:</b>	8/11/03	8/11/03	8/11/03	8/11/03
<b>Alpha Eff. (c/d):</b>	33	33	33	33
<b>Alpha Bkgd (cpm)</b>	0.3	0.2	0.4	0.3
<b>Sample Time (min)</b>	2	2	2	2
<b>Bkgd Time (min)</b>	10	10	10	10
<b>MDC (dpm/100cm<sup>2</sup>)</b>	9.0	9.0	9.0	9.0

Sample Location Number	Instrument ID#	Gross Counts (cpm)	Net Activity (dpm/100 cm <sup>2</sup> )
1	1	0.0	-0.9
2	2	1.0	0.9
3	3	1.0	0.3
4	4	1.0	0.6
5	1	2.0	2.1
6	2	2.0	2.4
7	3	0.0	-1.2
8	4	0.0	-0.9
9	1	2.0	2.1
10	2	0.0	-0.6
11	3	1.0	0.3
12	4	1.0	0.6
13	1	2.0	2.1
14	2	3.0	3.9
15	3	0.0	-1.2
		MIN	-1.2
		MAX	3.9
		MEAN	0.7
		SD	1.6
		Transuranic DCGL <sub>w</sub>	20

35

# PRE-DEMOLITION SURVEY FOR 991 CLUSTER

Survey Area: B

Survey Unit: 991-B-005

Classification: 3

Building: 984

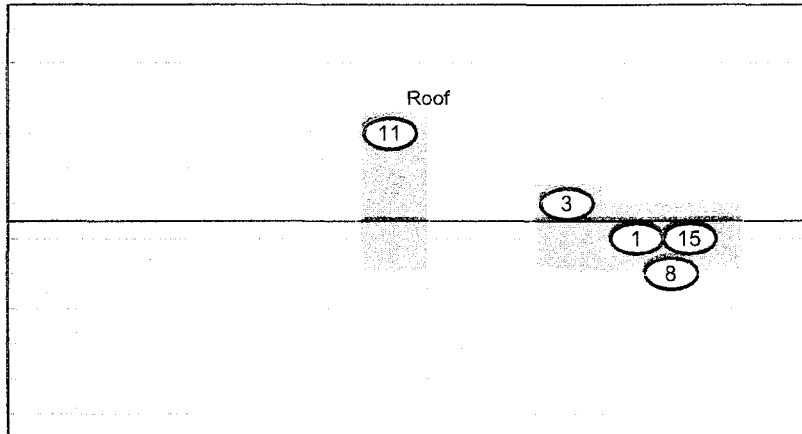
Survey Unit Description: Exterior of Building

Total Area: 781 sq. m.

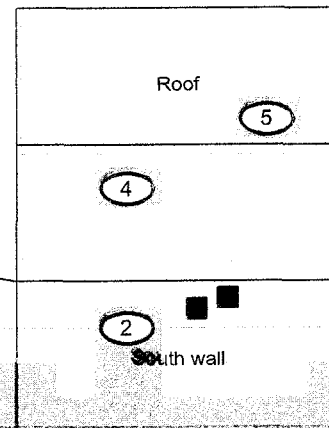
Total Roof Area: 354 sq. m.

PAGE 1 OF 1

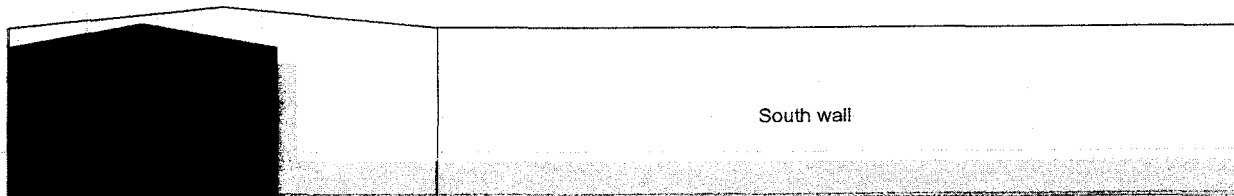
## B984 Main Bldg



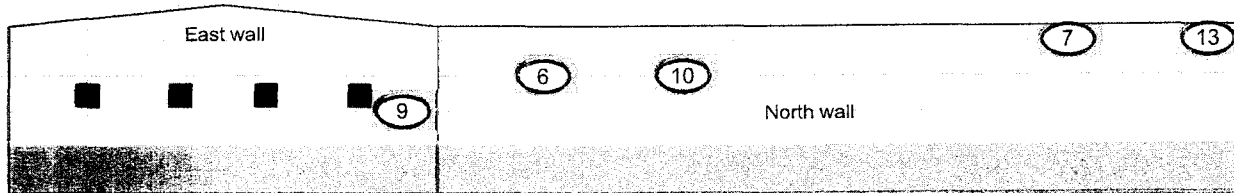
## B984 West Vestibule



West wall



East wall



Scan Area

### SURVEY MAP LEGEND

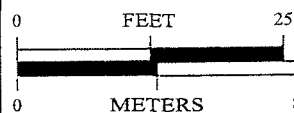
- Smear & TSA Location
- Smear, TSA & Sample Location
- Open/Inaccessible Area
- Area in Another Survey Unit

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### Scan Survey Information

Survey Instrument ID #(s): & RCT ID #(s):  
7, 8, 9



1 inch = 18 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:

CH2M HILL  
Communications Group

MAP ID: 02-0355/B984-EX-SC

Aug 13, 2003

## ATTACHMENT D

### Chemical Data Summaries and Sample Maps

### Asbestos Data Summary

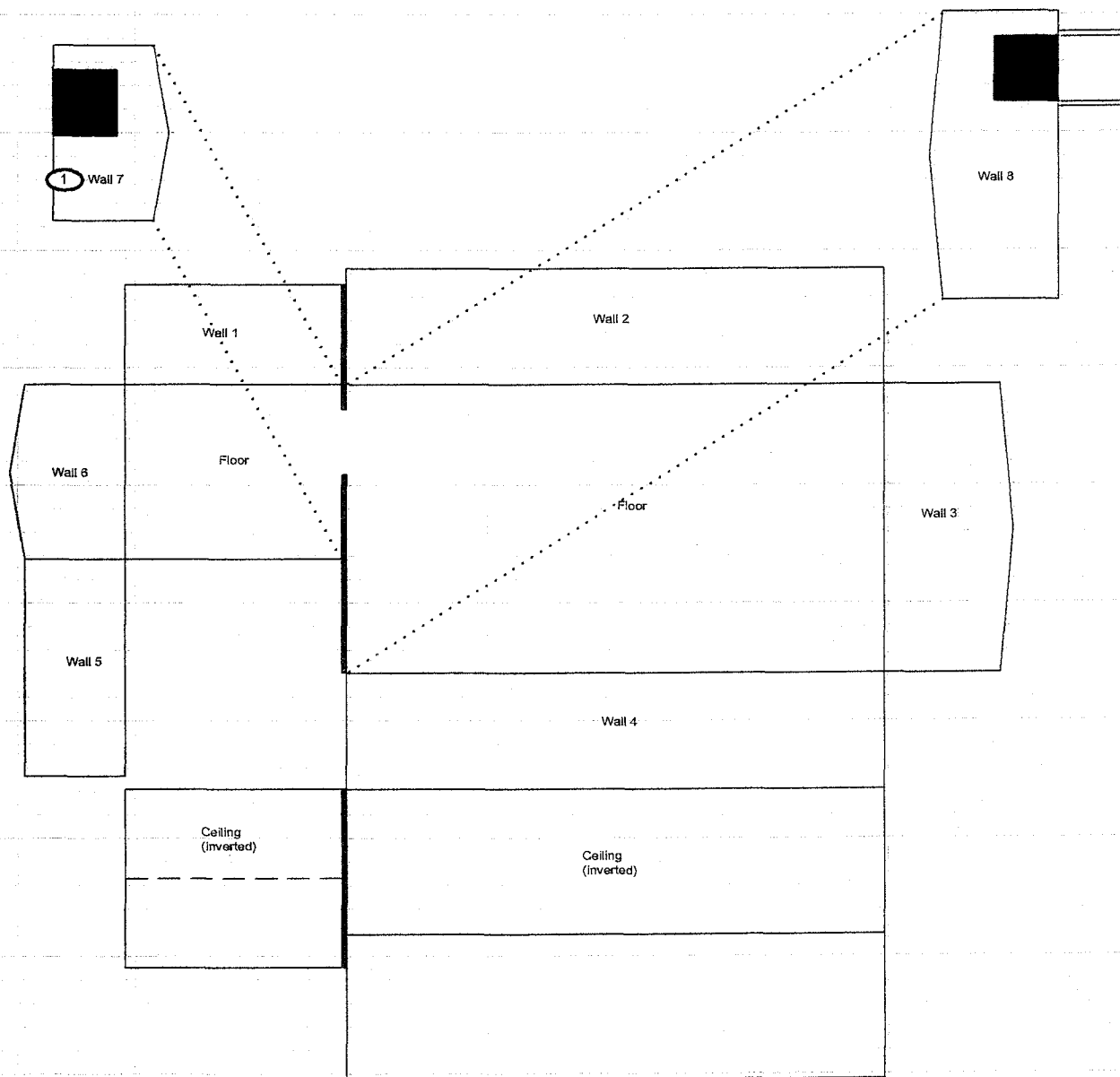
Sample Number	Map Survey Location	Room	Material Sampled and Location	Analytical Results
984-06262002-315-201	1	Main	Drywall and mud	
Building 984 - RIN 02D1442				
				None Detected

# CHEMICAL SAMPLE MAP

Building 984  
Asbestos

PAGE 1 OF 1

## Building 984



SURVEY MAP LEGEND		U.S. Department of Energy Rocky Flats Environmental Technology Site	
Asbestos Sample Location	<p>Neither the United States Government nor Kaiser Hill Co., nor DynCorp I&amp;ET, nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights.</p> <p><b>N</b> ↑</p> <p>0 30 FEET 0 10 METERS</p> <p>1 inch = 24 feet 1 grid sq. = 1 sq. m.</p>	Prepared by: GIS Dept. 303-966-7707	Prepared for:
Beryllium Sample Location			
Lead Sample Location			
RCRA/CERCLA Sample Location			
PCB Sample Location			
Open/Inaccessible Area	Area in Another Survey Unit	MAP ID: 02-0355/984-IN-ASB Aug 25, 2003	

## Beryllium Data Summary

Sample Number	Map Survey Point Location	Room	Sample Location	Result ( $\mu\text{g}/100 \text{ cm}^2$ )
<b>Building 984-RIN02D1443 and RIN03D2004</b>				
984-06192003-315-101	1	Main	Top of 13,800 V panels	< 0.1
984-06192003-315-102	2	Main	Top of cinderblock ledge, south wall	< 0.1
984-06192003-315-103	3	Main	Top of thermostat, south wall	< 0.1
984-06192003-315-104	4	Main	Top of substation alarm annunciator	< 0.1
984-06192003-315-105	5	Main	On concrete floor under desk	< 0.1
984-07022005-315-101	6	Main	On wall ledge	< 0.1
984-07022005-315-102	7	Main	On wall ledge	< 0.1
984-07022005-315-103	8	Main	On wall ledge	< 0.1
984-07022005-315-104	9	Main	On wall ledge	< 0.1
984-07022005-315-105	10	Main	On wall ledge	< 0.1

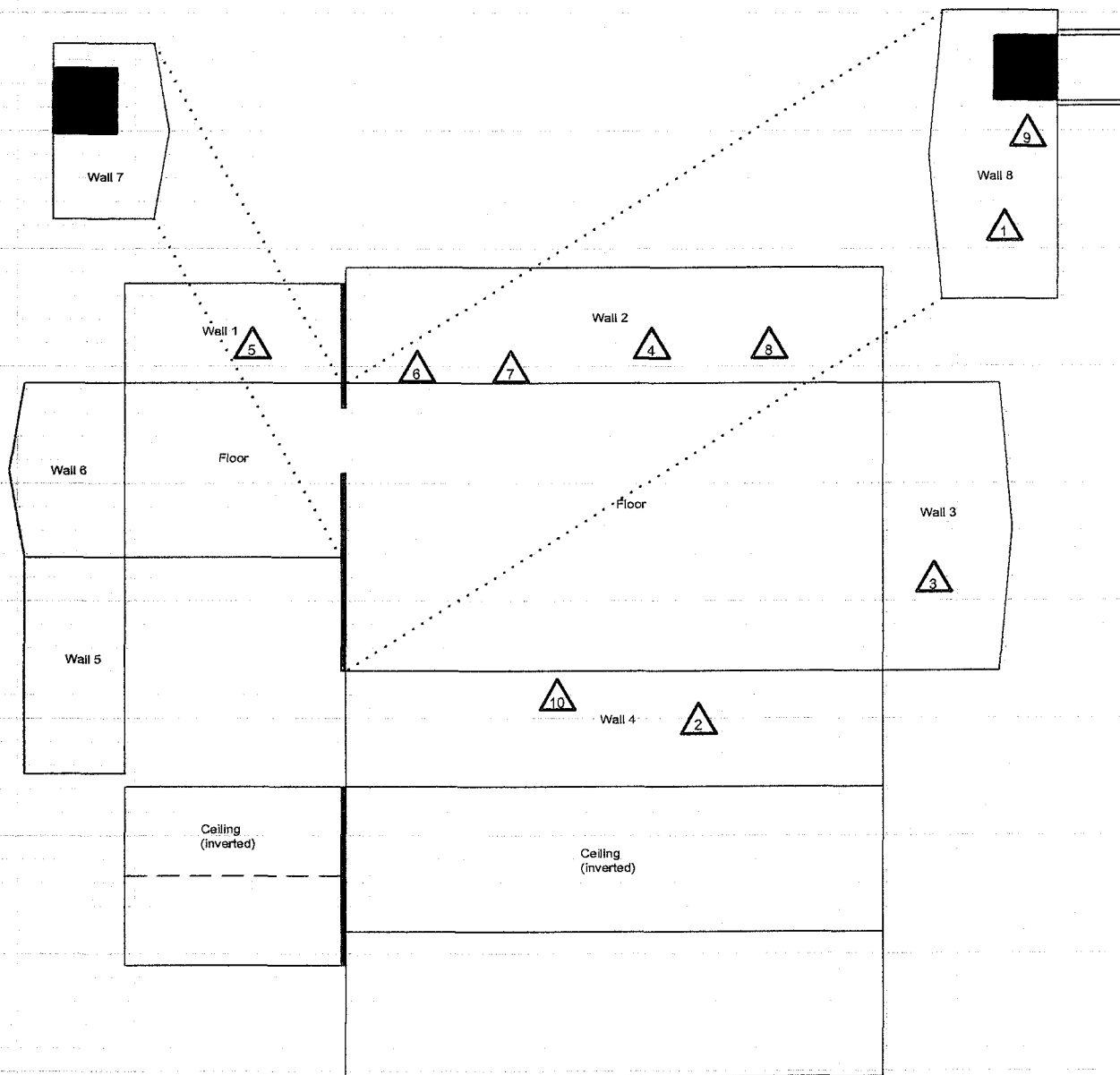


# CHEMICAL SAMPLE MAP

Building 984  
Beryllium

PAGE 1 OF 1

## Building 984



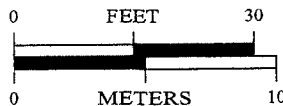
### SURVEY MAP LEGEND

- Asbestos Sample Location
- Beryllium Sample Location
- Lead Sample Location
- RCRA/CERCLA Sample Location
- PCB Sample Location

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- Open/Inaccessible Area
- Area in Another Survey Unit



1 inch = 24 feet 1 grid sq. = 1 sq. m.

U.S. Department of Energy  
Rocky Flats Environmental Technology Site

Prepared by: GIS Dept. 303-966-7707

Prepared for:



MAP ID: 02-0355/984-IN-BE

July 2, 2003

# ATTACHMENT E

## Data Quality Assessment (DQA) Detail

## DATA QUALITY ASSESSMENT (DQA)

### VERIFICATION & VALIDATION OF RESULTS

V&V of the data confirm that appropriate quality controls are implemented throughout the sampling and analysis process, and that any substandard controls result in qualification or rejection of the data in question. The required quality controls and their implementation are summarized in a tabular, checklist format for each category of data – radiological surveys and chemical analyses (specifically asbestos and beryllium).

DQA criteria and results are provided in a tabular format for each suite of surveys or chemical analyses performed; the radiological survey assessment is provided in Table E-1, asbestos in table E-2 and beryllium in E-3. A data completeness summary for all results is given in Table E-4.

All relevant Quality records supporting this report are maintained in the RISS Characterization Project Files. This report will be submitted to the CERCLA Administrative Record for permanent storage within 30 days of approval by the Regulators. All radiological data are organized into Survey Packages, which correlate to unique (MARSSIM) Survey Units. Chemical data are organized by RIN (Report Identification Number) and are traceable to the sample number and corresponding sample location.

Beta/gamma survey designs were not implemented for Building 984 based on the conservatism of the transuranic limits used as DCGLs in the unrestricted release decision process. Survey designs were implemented based on the transuranic limits used as DCGLs in the unrestricted release decision process. All survey results were evaluated against, and were less than the Transuranic DCGL<sub>w</sub> (100 dpm/100cm<sup>2</sup>) and the Uranium DCGL<sub>w</sub> (5,000 dpm/100cm<sup>2</sup>) unrestricted release limits.

Consistent with EPA's G-4 DQO process, the radiological survey design (for those survey units performed per PDS requirements) was optimized by checking actual measurement results (acquired during pre-demolition surveys) against model output with original estimates. Use of actual sample/survey (result) variances in the MARSSIM DQO model confirms that an adequate number of surveys were acquired.

### SUMMARY

In summary, the data presented in this report have been verified and validated relative to the quality requirements and project decisions as stated in the original DQOs. All data are useable based on qualifications stated herein and are considered satisfactory without qualification. All media surveyed and sampled yielded results less than their associated action levels and with acceptable certainties.

Based upon an independent review of the radiological data, it is determined that the original project DQOs satisfied MARSSIM guidance. All facility contamination levels were below applicable unrestricted release levels. Minimum survey requirements were met, sampling/survey protocol was performed in accordance with applicable procedures, survey units were properly designed and bounded, and instrument performance and calibration were within acceptable limits thereby ensuring data accuracy. All radiological results meet the PDS unrestricted release criteria, asbestos results were "none detected" and all beryllium results were less than associated action levels ( $0.1 \mu\text{g}/100\text{cm}^2$ ) thus confirming a Type 1 facility classification..

Chain of Custody was intact; documentation was complete, hold times were acceptable (where applicable,) and packaging integrity/custody seals were maintained throughout the sampling/analysis process. Level 2 Isolation Controls have been posted to prevent the inadvertent introduction of contamination into the facility. On this basis, Building 984 meets the unrestricted release criteria with the confidences stated herein.

4/4

**Table E-1 V&V of Radiological Surveys – Building 984**

V&V CRITERIA, RADIOLOGICAL SURVEYS		K-H RSP 16.00 Series MARSSIM (NUREG-1575)	
QUALITY REQUIREMENTS			
ACCURACY	Parameters	Measure	frequency
	initial calibrations	90%<x<110%	≥1
PRECISION	daily source checks	80%<x<120%	≥1/day
	local area background: Field	typically < 10 dpm	≥1/day
	field duplicate measurements for TSA	≥ 5% of real survey points	≥10% of reals
	REPRESENTATIVENESS	MARSSIM methodology: Survey Units 991-A-001 (interior) and 991-B-005 (exterior). Survey Maps	statistical and biased NA
COMPARABILITY	Controlling Documents (Characterization Pkg; RSPs)	qualitative	NA
	units of measure	dpm/100cm <sup>2</sup>	NA
COMPLETENESS	Plan vs. Actual surveys usable results vs. unusable	>95% >95%	NA
SENSITIVITY	detection limits	TSA: ≤50 dpm/100cm <sup>2</sup> RA: ≤10 dpm/100cm <sup>2</sup>	all measures
		MDAs ≤ 50% DCGL <sub>w</sub> per MARSSIM guidelines.	
		See Table E-4 for details.	
		Use of standardized engineering units in the reporting of measurement results.	
		Refer to the Characterization Package (planning document) for field/sampling procedures (located in Project files); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.	
		Random and biased measurement locations controlled/mapped to ± 1m.	
		Random w/ statistical confidence.	
		N/A	
		All local area backgrounds were within expected ranges (i.e., no elevated anomalies.)	
		Performed daily/within range.	
		Multi-point calibration through the measurement range encountered in the field; programmatic records.	

**Table E-2 V&V of Asbestos Results – Building 984**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE		COMMENTS
ASBESTOS	METHOD: EPA 600/R-93/116	LAB ---->	Reservoirs Environmental, Inc	
QUALITY REQUIREMENT		RIN ---->	RIN02D1442	
ACCURACY	Calibrations: Initial/continuing	Measure below detectable amounts	Frequency ≥ 1	Semi-quantitative, per (microscopic) visual estimation.
PRECISION	Actual Number Sampled LCSD Lab duplicates	all below detectable amounts	≥ 1 sample	Semi-quantitative, per (microscopic) visual estimation.
REPRESENTATIVENESS	COC	Qualitative	NA	Chain-of-Custody intact: completed paperwork, containers w/ custody seals.
	Hold times/preservation	Qualitative	NA	N/A
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA	See original Chemical Characterization Package (planning document); for field/sampling procedures (located in project file); thorough documentation of the planning, sampling/analysis process, and data reduction into formats.
COMPARABILITY	Measurement Units	% by bulk volume	NA	Use of standardized engineering units in the reporting of measurement results.
COMPLETENESS	Plan vs. Actual samples Usable results vs. unusable	Qualitative	NA	See Table E-4; final number of samples at Certified Inspector's discretion.
SENSITIVITY	Detection limits	<1% by volume	all measures	N/A

**Table E-3 V&V of Beryllium Results – Building 984**

V&V CRITERIA, CHEMICAL ANALYSES		DATA PACKAGE	
BERYLLIUM	Prep: NMAM 7300 METHOD: OSHA ID-125G	LAB ---->	Johns Manville Littleton, Co. Reservoirs Environmental, Inc.
		RIN ---->	RIN02D1443 & RIN03D2004
QUALITY REQUIREMENTS		Measure	Frequency
ACCURACY	Calibrations Initial	Linear calibration	≥1
	Continuing	80%<%R<120 %	≥1
	LCS/MS	80%<%R<120 %	≥1
	Blanks - lab & field	<MDL	≥1
	interference check std (ICP)	NA	NA
PRECISION	LCSD	80%<%R<120 %	≥1
	field duplicate	(RPD<20%)	
REPRESENTATIVENESS	COC	all results < RL	≥1
	hold times/preservation	Qualitative	NA
	Controlling Documents (Plans, Procedures, maps, etc.)	Qualitative	NA
	measurement units	Qualitative	NA
COMPARABILITY		ug/100cm <sup>2</sup>	NA
COMPLETENESS	Plan vs. Actual samples	>95%	NA
	usable results vs. unusable	>95%	NA
SENSITIVITY	detection limits	MDL of	
		0.012 ug/100cm <sup>2</sup>	all measures
		COMMENTS	
		No qualifications significant enough to change project decisions i.e., classification of a Type 1 facility is confirmed. All results were below associated action levels.	

**Table E-3 Data Completeness Summary – Building 984**

ANALYTE	Building/Area/ Unit	Sample Number Planned (Real & QC)	Sample Number Taken (Real & QC)	Project Decisions (Conclusions) & Uncertainty	Comments (RIN, Analytical Method, Qualifications, etc.)
Asbestos	Building 984 (interior)	6 biased	1 biased	No ACM present, all results < 1% by volume	40 CFR 763.86; 5 CCR 1001-10; EPA 600/R-93/116  RIN02D1442
Beryllium	Building 984 (interior)	5 biased	10 biased	No beryllium contamination found, all results less than associated action levels	OSHA ID-125G  RIN02D1443 (map sample locations 1 through 5) RIN03D2004 (map sample locations 6 through 10)  No results above action level (0.2ug/100cm <sup>2</sup> ) or investigative level (0.1 ug/100cm <sup>2</sup> ).
Radiological	Survey Area A Survey Unit: 991-A-001 Building 984 (interior)	15 α TSA and 15 α Smears (random)  2 QC TSA  5% scan of interior surfaces	15 α TSA and 15 α Smears (random)  2 QC TSA  5% scan of interior surfaces	No elevated contamination found at any location; all values below PDS unrestricted release levels	Transuranic and/or Uranium DCGLs as applicable.
Radiological	Survey Area B Survey Unit: 991-B-005 Building 984 (exterior)	15 α TSA and 15 α Smears (random)  2 QC TSA  5% scan of exterior surfaces	15 α TSA and 15 α Smears (random)  2 QC TSA  5% scan of exterior surfaces	No elevated contamination found at any location; all values below PDS unrestricted release levels	Transuranic and/or Uranium DCGLs as applicable.